November 10, 2009

For Discussion Purposes Only

U.S. Environmental Protection Agency Comments
Site Characterization Report
Radiation Technology, Inc. Superfund Site

1. The title of the report (Site Characterization Summary Report Operable Unit 2) should be revised to state that it is a focused remedial investigation to address potential source(s) of groundwater contamination at the Radiation Technology, Inc. (Site) (Operable Unit 2). The report is not a 'characterization summary' because it does not summarize all historical remedial investigative work carried out at the Site, nor does it characterize soil contamination based on all historic information. Rather, the report discusses results based on fairly specific areas that required additional investigations with a focus on historic operations related to the rocket motor industry.

2. The Report does not compare the soil results to the New Jersey Soil Remediation Standards (Non-Residential Direct Contact) nor to Impact to Groundwater Soil Screening Levels. New Soil Remediation Standards were promulgated by New Jersey Department of Environmental Protection (NJDEP) in June 2008 and will need to be compared to contaminant concentrations in soil reported from this investigation. The application of the newly formulated Impact to Groundwater Screening Levels to Site soils will need to be discussed with NJDEP.

3. Page 20, section 2.8, RTI Area Subsurface Waste delineation:

   a. The section indicates that samples of waste material and subsurface soils were collected for laboratory analysis. However, although the report states that drums were partially full of burnt material, it does not indicate whether the contents of drums were sampled. Please clarify.

   b. Although the fence line along the eastern edge of the RTI property defined the eastern extent of the investigation of the waste disposal area, the results from test pits indicate that waste disposal subarea A likely extends beyond this boundary. It may be necessary to extend the investigation further east to complete characterization of nature and extent of waste in subarea A.

4. In table 2.1 and tables 2.3-2.6, varying analytes are listed for each sample location or group of sample locations. For example, on table 2.5, analytes V, M, E2, S1 are listed for sample locations SB-71/SB-72 whereas analytes V, SV, M, E1, S1 are listed for sample locations SB-73/SB-90. The rationale for sampling at both these sampling locations is to provide information on potential impacts of soil due to operation of the test stand. Yet, it is not clear why a different energetic analyte (E1, E2) was selected for each location group and why the semi volatile organic compound (SVOC) analyte (SV) was selected for one location group and not the other. Please indicate the rationale for the selection of analytes.

5. In the above tables, the analyte S1 bears the footnote (1) "S1 - Surface soil sample only". It is not clear what is meant by this as S1 is listed for soil borings and S1 is listed as one of the analytes "Additional Parameters – Soil". Please clarify.

Risk Assessment Section:

This document contains the Human Health Risk Assessment as an appendix. Typically, we receive a pathways analysis report prior to receiving the human health risk assessment. Appendix A indicates that it is both the pathway analysis report and human health risk assessment. Although the human health risk assessment contains everything that is in a pathway analysis report, the report cannot serve both purposes. Given that the pathway analysis report is a stepping stone toward the human health risk assessment, the pathway analysis designation does not serve any purpose, thus the U.S. Environmental Protection Agency (EPA) has reviewed this document as a draft human health risk assessment and offer the following comments.

Appendix A

Page 11, Section 3.2, Risk-based Screening, second paragraph – This paragraph indicates that surface water was screened against three criteria's, with the Region IX tap water Preliminary Remediation Goals (PRGs) being the third criteria. The Regional screening PRGs should be the first criteria that are used in the screening process, with the remaining two criteria's being used only if they are less than the Regional screening PRGs. In addition, we are now using the Regional Screening table (http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm), which was taken from the Region IX PRG table. The screening values that were used

in this document should be updated to reflect the values that are in the regional screening table.

7. Page 15, second paragraph – The methodology used to eliminate chemicals based upon background concentrations is not appropriate. All chemicals that exceed the initial screening values in Table 2x should be carried through in the quantitative risk assessment. It is appropriate to present secondary hazard and risk estimates in the risk characterization section or uncertainty section that do not contain the chemicals that are assumed to be related to background concentrations, however, the initial quantitative hazard and risk estimates need to include all chemicals that exceed the screening values. The Risk Assessment Guidance for Superfund (RAGS) Part D tables (Table 3x, 7x, 9x, and 10x) will need to be adjusted, as well as the text that describes the hazards and risks that were calculated.

8. Page 19, Deer Meat – The values used in the formula to calculate the chemical concentration in deer meat need to have the rationale for their selection included. For example, the fraction of plant growth in a contaminated area and eaten by the animal has a recommended default of 1, however, 0.1 was chosen as the value for this assessment. In addition the value for quantity of plant (Qp) may overestimate the amount of food a deer would consume. The value of 8.8 kg/day is based on a cow diet. A more realistic value, which is based upon goat values, can be found at http://rais.ornl.gov/homepage/bjcor271/appf.shtml. Also, the default value for quantity of soil (Qs) is recommended as 0.5 kg/day, while the value chosen for this assessment used 0.5 mg/kg.

9. Page 29, Exposure Assessment – This paragraph describes the climate in Connecticut, however, the Site is located in New Jersey. Although both states have similar climates, the reference to Connecticut should be changed to New Jersey.

10. Pate 29, last paragraph – It is unclear what is being referenced in this paragraph. The oral reference dose (RfD) listed in Table 5.1 and 5.2 are referenced as being published in the Integrated Risk Information System (IRIS). Based on this, it appears that the hazards that were calculated for exposure to manganese are not exceptionally conservative as suggested.

11. Table 4.1 – The exposure population is missing from this table.

12. Table 4.10 – As discussed previously, the rationale for the deer consumption rate should be identified as “best professional judgment” with a description of the calculations that were used to derive the deer consumption rate (i.e., average deer weight, edible portion of deer, etc.). Referencing the fish consumption rate from the Exposure Factors Handbook is not appropriate.

13. Table 10x – The reported chemicals in Table 10x does not follow a standard reporting practice for non-cancer chemicals. Non-cancer causing chemicals from Tables 9x that contribute to an individual hazard quotient of 1 or a summed hazard index of 1 should be reported in the Table 10x series. As currently calculated, the Table 10x series should contain non-cancer compounds for Table 10.12, 10.13, and 10.14. However, this may change as the hazards and risks are recalculated to include potential background constituents.

Draft Screening Level Ecological Risk Assessment

Overall, the structure of the Screening Level Ecological Risk Assessment (SLERA) does not conform to EPA’s standard approach and it is unclear if the results of the SLERA are acceptable. The text indicates that Steps 1 through 3 of the ecological risk assessment methodology was followed, however the implementation of the steps seem to be combined and not completed in the proper order. The SLERA will need to be revised and resubmitted.

14. The revisions should focus on the following issues:

a. **Format** – The format of the SLERA should follow the outline provided in EPA’s Ecological Risk Assessment Guidance for Superfund (ERAGs): Process for Designing and Conducting Ecological Risk Assessments (EPA 540-R-97-006). Although the current SLERA indicates that this guidance was utilized, the structure of the report does not follow the guidance. The SLERA should contain the following sections:
   - Problem Formulation
   - Habitat and Biota
   - Threatened and Endangered Species
   - Nature and Extent of Contamination (in relation to Habitat and Biota)
   - Risk Questions
   - Conceptual Site Model
   - Exposure Pathways

- Assessment Endpoints
- Measurement Endpoints
- Risk Characterization methods (describe the Hazard Quotient (HQ) process)
- Exposure Assessment
- Effects Assessment (screening values and toxicity reference values)
- Risk Characterization
- Risk Summary (answer risk questions and reach one of three scientific/management decision points (SMDP) from page 2-5 of ERAGs)
- Uncertainty
- Additional information evaluating Step 3 – using 95% upper confidence limit (UCLs), no-observed-adverse-effect level (NOAEL) and lowest-observed-adverse-effect level (LOEAL), with limited food chain alterations (Section 5.5.1)
- Revised Problem Formulation identifying data needs for Baseline Ecological Risk Assessment (BERA)

b. **Methods** – The methods utilized in the current draft of the SLERA are not consistent or are out-of-order with ERAGs. The use of a screening quotient ratio, appears to be similar to the hazard quotient method outlined in ERAGs, however it is utilized in a process prior to identifying the exposure pathways, assessment endpoints, and measurement endpoints. In addition, the information provided in 2.3.1 through 2.3.3 appears to be information that is related to Step 2 of the ERAGs process, which is the end point of the SLERA, whereas it is used as a beginning step in this SLERA. The SLERA should contain information to complete Step 1 and Step 2 outlined in ERAGs. There is also confusing language beginning in Section 3 and carried through to Section 5 where different steps are being described. It is not clear if these "steps" are related to the steps identified in ERAGs or if they are steps from another process.

c. **Additional Step** – The current SLERA appears to be primarily a Step 3 or even Step 7 assessment from ERAGs (i.e., from Section 3.0 through Section 6.0), which are both processes used in a BERA. Although it is acceptable to proceed with Step 3 as part of a SLERA, in this instance, the evaluation exceeded the normal evaluation undertaken in Step 3. The information contained in the SLERA that would normally be associated with Step 3 from ERAGs, is primarily covered in Step 2 of the current SLERA (Section 5.5.1). The information provided in Step 3

from Section 5 should be removed from the SLERA and incorporated into the BERA, with possible inclusion of site-related data, such as invertebrate tissue residue and site-specific use factors derived from censuses.

d. **Conclusion** – It appears that the conclusion of the SLERA should be SMDP number 3, which is "the information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted". The next steps would be further refining the conceptual site model and determining the data gaps that need to be filled as the process moves into the BERA-phase.

Specific Comments

15. Section 2.3.2 – Dissolved metal concentrations were used in the screening process for the SLERA. Total metal concentrations for surface water should be used for comparison purposes. Dissolved concentrations of metals can also be presented and discussed in the uncertainty section to bound estimates. In addition, dissolved concentrations of metals can be used in Step 3 of the BERA.

16. Section 3.0 – Use of the 95% upper-confidence limit is not acceptable for Step 2 in the ERAGs process. It is acceptable for use during Step 3 of the ERAGs process.

17. Section 5.2 – The surface soil HQ for chromium is listed as 309, however earlier in the document the screening quotient ratio (SQR) for chromium was listed as 16. Given that section 5.2 is related to using less conservative assumptions, it is unclear how the HQ could be an order of magnitude higher.

18. Section 6.1, page 14, first full paragraph – Indicating the Site contains a "complete ecosystem" is not evidence that the environment is healthy and un-impacted. Given the lack of detailed sampling and ecological investigations at the Site (e.g., avian census, small mammal trapping, population studies) no conclusions can be reached regarding a complete ecosystem or un-impacted environment can be reliably made. The SLERA, even with the flaws, indicates that there are HQs that exceed the acceptable value of 1, and in many cases, exceed the value by several orders of magnitude.

19. Tables B-8 to B14 – There was no information provided regarding the estimation of food concentrations (e.g., invertebrate concentration, plant concentration, mammal concentration, fish concentration) in the calculation of dose estimates. Although these calculations are better suited to BERA calculations using measured values, information regarding these values is requested to evaluate data gaps for the next step of the ecological evaluation.